National Aeronautics and Space Administration
Fleet Alternative Fuel Vehicle Program Report for Fiscal Year 2003
December 22, 2003

This National Aeronautics and Space Administration (NASA) Fleet Alternative Fuel Vehicle (AFV) Report for Fiscal Year (FY) 2003 presents the Agency's data on the number of alternative AFVs acquired in FY 2003, and its planned and projected acquisitions for FY 2004 and FY 2005. This report has been developed in accordance with the Energy Policy Act of 1992 (EPAct) (42 U.S.C. 13211-13219) as amended by the Energy Conservation Reauthorization Act of 1998 (Public Law 105-388) (ECRA), and Executive Order (E.O.) 13149 (signed by the President in April 2000). As shown in Figure 1, NASA exceeded the 75 percent AFV-acquisition requirement for 230 vehicles by acquiring 286 total credits in FY 2003. Attachment A provides detailed information on the number and types of light-duty vehicles leased or purchased by NASA in FY 2003.

Additionally, NASA successfully met the E.O. goal of a 1 mile per gallon (mpg) fuel economy increase in FY 2002, and exceeded the Executive Order goal of 3 mpg by FY 2005 during FY 2003, since the fleet average fuel economy for covered, conventional petroleum light-duty vehicles was 21.1 mpg in FY 2003 compared to the baseline of 18 mpg in FY 1999. Furthermore, due to an aggressive AFV Strategy, NASA is on track to meet the requirement that alternative fuels must be used in AFVs more than 50% of the time in FY 2005.

Legislative Requirements

EPAct requires that 75 percent of all covered light-duty vehicles acquired for Federal fleets in FY 1999 and beyond must be AFVs (where the fleets have 20 or more vehicles, are capable of being centrally fueled, and are operated in a metropolitan statistical area with a population of more than 250,000 based on the 1980 census). Certain emergency, law enforcement, and national defense vehicles are exempt from these requirements. EPAct also sets a goal of using replacement fuels to displace at least 30 percent of the projected consumption of motor fuel in the United States annually by the year 2010. The **ECRA of 1998** amended EPAct to allow one alternative fuel vehicle acquisition credit for every 450 gallons of pure biodiesel fuel consumed in vehicles over 8,500 pounds gross vehicle weight rating. "Biodiesel credits" may fulfill up to 50 percent of an agency's EPAct requirements. The head of each Federal agency must also prepare and submit a report to Congress outlining the agency's AFV acquisitions and future plans by November 13th each year. **E.O. 13149** directs Federal agencies operating a fleet of 20 or more vehicles within the United States to reduce their annual petroleum consumption by at least 20 percent by the end of FY 2005 (compared to FY 1999 levels) by using alternative fuels in AFVs more than 50 percent of the time, improving the average fuel economy of new light-duty petroleum-fueled vehicle acquisitions by 1 mpg by FY 2002 and 3 mpg by FY 2005, and using other fleet efficiency measures.

NASA Approach to Compliance with EPAct and E.O. 13149

To achieve compliance with the legislative mandates of EPAct and E.O. 13149, NASA has developed a compliance strategy including the acquisition of 75 percent of new, covered light-duty vehicles as AFVs, and use alternative fuel in these vehicles a majority of the time. NASA will also continue to acquire light duty vehicles with a higher fuel economy, and further reduce petroleum consumption by using biodiesel fuel in most diesel vehicles.

NASA also recognizes that AFV fueling infrastructure is extremely limited in most areas of the country. As such NASA has or intends to develop AFV fueling infrastructure at those NASA Center's where it is not readily commercially available. Additionally, each NASA Center now reports periodically during NASA's internal institutional review on compliance with EPAct and E.O. 13149.

NASA Fleet Compliance for FY 2003

Figure 1 is a graphical depiction of AFV acquisitions by NASA's fleet in FY 2001, 2002, and 2003. NASA acquired 307 covered light-duty vehicles (LDVs) in fiscal year 2003, of which 204 were AFVs. NASA also gained 84 credits for biodiesel fuel use and for acquiring dedicated light, medium, and heavy-duty AFVs, for a total of 286 credits, thereby exceeding EPAct requirements by 18 percentage points.

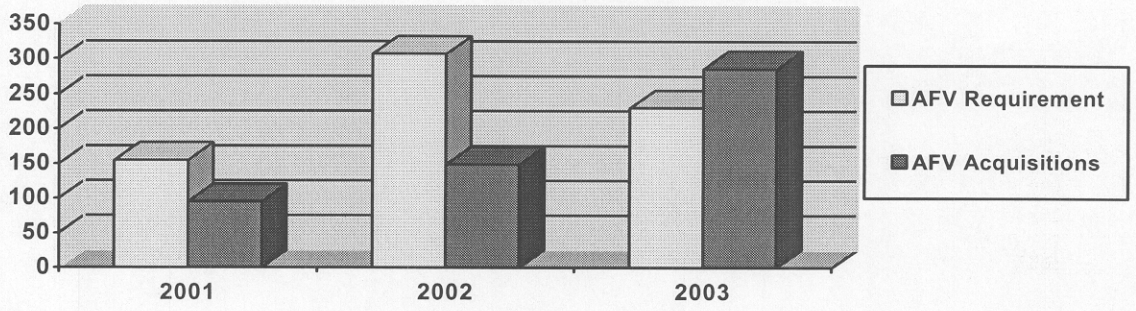

Figure 1. Summary of [AGENCY]'s FY 2003 AFV Acquisitions

A number of vehicles that were leased and purchased by NASA were not "covered" vehicles. Of the total of 412 light-duty vehicles acquired in FY 2003, the following were not counted for compliance:

- 60 were in fleets located outside covered metropolitan statistical areas (MSAs)
- 29 were exempt as law enforcement vehicles
- 15 were exempt due to geographic assignment

Improved Fuel Economy

Baseline fleet average fuel economy for covered, conventional petroleum light-duty vehicles was 18 mpg in FY 1999. In FY 2003, NASA achieved a fleet average fuel economy of 21.1 mpg, exceeding the 3 mpg improvement goal for FY 2005.

NASA's Fleet AFV Acquisitions for FY 2004 and FY 2005

Attachments B and C provide detailed information on planned and projected vehicle acquisitions for NASA in FY 2004 and FY 2005. In FY 2004, NASA is planning to acquire a cumulative total of 349 light-duty vehicles, of which 343 will be alternative fuel vehicles, exceeding the EPAct requirements of 262 AFVs. The NASA strategy projects that the same number of LDVs and AFVs will be acquired in FY 2004

Special Projects of the NASA Fleet Related to AFV and Infrastructure Acquisitions

Significant AFV fueling infrastructure projects are currently underway at several NASA Centers. During FY 2004 NASA will bring on line three additional E-85 fueling stations. These stations in addition to the conversion of existing diesel tanks to Bio Diesel (B-20) will significantly decrease NASA's petroleum consumption and increase our percentage of AFV fuel used in AFV's

Petroleum Savings

Since it is difficult, if not impossible, to project petroleum savings for FY 2004 and FY 2005 based upon the estimated AFV acquisitions, improvements in fuel economy, and fleet efficiency, petroleum savings are reported for only FY 2003 based on actual data at hand for FY 1999 and FY 2003.

In FY 1999 NASA's estimated baseline petroleum consumption was 1,478,081 GGE and FY 2003 petroleum consumption was 1,335,638 GGE. This represents a savings of 142,443 GGE in FY 2003 compared to the 1999 baseline (a 9.6 percent reduction in fuel use).

Alternative Fuel Use by NASA in FY 2003

Table 1 presents alternative fuel use data for NASA's fleet in fiscal year 2003. The majority of vehicles acquired by NASA and other Federal fleets are leased from GSA, and the leasing contract folds in the maintenance and fuel costs for the vehicles. This is accomplished by the use of a GSA credit card that the fleets use to purchase alternative fuel. However, since product code standards are not uniform among suppliers of alternative fuels (e.g., ethanol or E-85), it is difficult for credit vendors to accurately track the purchase of alternative fuels with this credit card. The exception may be natural gas, which is usually purchased at a local utility refueling site, allowing the fleets to contact the utility for an accurate accounting of purchased fuel. Thus, alternative fuel use data is

approximated from proportioning GSA data and internal record keeping efforts. Attachment D provides detail on covered petroleum use and alternative fuel use.

The greatest contribution to petroleum reduction is expected to be achieved by use of alternative fuels. Therefore, NASA is aggressively seeking to procure AFV fueling infrastructure, and education efforts are underway to familiarize drivers and all fleet personnel with alternative fuel technologies. In locations with access to alternative fuels, credit cards have been coded to disallow fueling of flex or bi-fuel vehicles with petroleum. This approach will ensure 100% use of alternative fuel in those vehicles.

Table 1. NASA Fuel Use in FY 2003

Fuel Type	Quantity	Unit
Biodiesel – B100	29,890	Gallons
CNG	17,314	Gallons @ 2,400 psi, 70°F
Diesel	199,833	Gallons
E-85	860	Gallons*
Gasoline	1,135,805	Gallons
Propane	2,576	Gallons

* Estimate based on incomplete data

Summary

As detailed in this report and the attachments, NASA exceeded the AFV acquisition requirements of EPAct in FY 2003 and projects to repeat this accomplishment in FYs 2004 and 2005. In addition, NASA fleets were able to reduce the agency's annual fleet petroleum consumption by 142,443 GGE in FY 2003. Part of this reduction was achieved by the 3.1 mpg fleet average fuel economy increase in FY 2003 for covered, conventional petroleum light-duty vehicles. Further petroleum reduction was achieved by using alternative fuels for 9.4% of the operation of AFVs.

NASA will continue to implement its strategy for complying with the requirements of Executive Order 13149, which will result in at least a 20 percent reduction in the fleet's annual petroleum consumption in FY 2005.

Attachment A
National Aeronautics and Space Administration
FY 2003 Vehicle Acquisitions

Actuals FY 2003 Light-Duty Vehicle Acquisitions					Total Vehicle Inventory
		Leased	Purchased	Total	
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		396	16	412	2,609
Exemptions	Fleet Size	0	0	0	0
	Geographic	15	0	15	103
	Law Enforcement	29	0	29	100
	Non-MSA Operation (fleet)	60	0	60	513
	Non-MSA Operation (vehicles)	(n/a)	(n/a)	1	(n/a)
EPACT Covered Acquisitions		**292**	**16**	**307**	**1,893**

Actuals FY 2003 AFV Acquisitions					Total Vehicle Inventory
Vehicle		Leased	Purchased	Total	
Sedan	CNG Bi-Fuel Subcompact	42	0	42	45
Sedan	CNG Dedicated Subcompact	6	3	9	10
Sedan	CNG Bi-Fuel Compact	0	0	0	54
Sedan	E-85 Flex-Fuel Compact	47	0	47	45
Sedan	E-85 Flex-Fuel Midsize	4	9	13	61
Sedan	CNG Dedicated Large	1	0	1	1
Pickup 4x2	CNG Bi-Fuel	23	0	23	67
Pickup 4x2	CNG Dedicated	3	0	3	3
Pickup 4x2	E-85 Flex-Fuel	9	0	9	59
Pickup 4x2	LPG Bi-Fuel	3	0	3	6
Pickup 4x4	CNG Bi-Fuel	1	0	1	2
Pickup 4x4	E-85 Flex-Fuel	0	0	0	1
Pickup 4x4	LPG Bi-Fuel	0	0	0	1
SUV 4x2	E-85 Flex-Fuel	2	0	2	2
SUV 4x4	E-85 Flex-Fuel	1	0	1	2
Van 4x2	CNG Bi-Fuel	0	0	0	4
Van 4x2	CNG Dedicated	5	0	5	7
Van 4x2	E-85 Flex-Fuel	28	2	30	238
Other 4x2	CNG Bi-Fuel	0	0	0	15
Bus	CNG Bi-Fuel	0	0	0	1
Bus	CNG Dedicated	0	0	0	1
Pickup MD	CNG Bi-Fuel	3	0	3	6
Van MD	CNG Bi-Fuel	8	0	8	21
Van MD	CNG Dedicated	3	0	3	7
Van MD	LPG Dedicated	0	0	0	6
MD 8,501-16,000 GVWR	CNG Bi-Fuel	0	0	0	2
MD 8,501-16,000 GVWR	CNG Dedicated	0	0	0	7
HD 16,001 + GVWR	LPG Bi-Fuel	0	1	1	0
HD 16,001 + GVWR	LPG Dedicated	0	0	0	8
Total Number of AFV Acquisitions		**189**	**15**	**204**	**682**
Zero Emission Vehicle Credits		0	0	0	
Dedicated Light-Duty AFV Credits		15	3	18	
Dedicated Medium-Duty AFV Credits		6	0	6	
Dedicated Heavy-Duty AFV Credits		0	0	0	
Biodiesel Fuel Usage Credits - Actuals				58	
Total AFV Acquisitions with Credits		210	18	286	
AFV Percentage of Covered Light-Duty Vehicle Acquisition				**93%**	

Attachment B

National Aeronautics and Space Administration
FY 2004 Planned Vehicle Acquisitons

Planned FY 2004 Light-Duty Vehicle Acquisitions

		Leased	Purchased	Total
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		328	21	349
Exemptions	Fleet Size	0	0	0
	Geographic	10	0	10
	Law Enforcement	24	0	24
	Non-MSA Operation (fleet)	68	2	70
	Non-MSA Operation (vehicles) (From Section I(b))	(n/a)	(n/a)	0
EPACT Covered Acquisitions		**226**	**19**	**245**

Planned FY 2004 AFV Acquisitions

Vehicle		Leased	Purchased	Total
Sedan	CNG Bi-Fuel Subcompact	4	0	4
Sedan	CNG Dedicated Subcompact	1	0	1
Sedan	CNG Bi-Fuel Compact	5	0	5
Sedan	E-85 Flex-Fuel Compact	58	0	58
Sedan	E-85 Flex-Fuel Midsize	23	5	28
Pickup 4x2	CNG Bi-Fuel	24	0	24
Pickup 4x2	CNG Dedicated	0	2	2
Pickup 4x2	E-85 Flex-Fuel	54	5	59
Pickup 4x2	LPG Bi-Fuel	2	0	2
Pickup 4x4	E-85 Flex-Fuel	10	2	12
SUV 4x2	E-85 Flex-Fuel	8	0	8
SUV 4x4	E-85 Flex-Fuel	13	0	13
Van 4x2	CNG Bi-Fuel	1	0	1
Van 4x2	CNG Dedicated	7	0	7
Van 4x2	E-85 Flex-Fuel	47	5	52
Bus	CNG Dedicated	1	0	1
Pickup MD	CNG Bi-Fuel	21	0	21
Van MD	CNG Bi-Fuel	36	0	36
Van MD	CNG Dedicated	4	0	4
Van MD	LPG Dedicated	1	0	1
MD 8,501-16,000 GVWR	CNG Dedicated	0	4	4
Total Number of AFV Acquisitions		**320**	**23**	**343**
Zero Emission Vehicle Credits		0	0	0
Dedicated Light-Duty AFV Credits		8	2	10
Dedicated Medium-Duty AFV Credits		12	8	20
Dedicated Heavy-Duty AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Planned				92
Total AFV Acquisitions with Credits		**340**	**33**	**465**
AFV Percentage of Covered Light-Duty Vehicle Acquisition				**190%**

Attachment C
National Aeronautics and Space Administration
FY 2005 Projected Acquisitions

Projected FY 2005 Light-Duty Vehicle Acquisitions

		Leased	Purchased	Total
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		325	19	344
	Fleet Size	0	0	0
	Geographic	0	0	0
	Law Enforcement	11	0	11
	Non-MSA Operation (fleet)	95	4	99
Exemptions	Non-MSA Operation (vehicles) (From Section I[b])	*(n/a)*	*(n/a)*	0
EPACT Covered Acquisitions		219	15	234

Projected FY 2005 AFV Acquisitions

Vehicle		Leased	Purchased	Total
Sedan	CNG Bi-Fuel Subcompact	10	0	10
Sedan	CNG Bi-Fuel Compact	18	0	18
Sedan	E-85 Flex-Fuel Compact	54	0	54
Sedan	E-85 Flex-Fuel Midsize	1	5	6
Pickup 4x2	CNG Bi-Fuel	3	0	3
Pickup 4x2	CNG Dedicated	4	0	4
Pickup 4x2	E-85 Flex-Fuel	84	5	89
Pickup 4x2	LPG Bi-Fuel	6	0	6
Pickup 4x4	E-85 Flex-Fuel	7	0	7
SUV 4x4	E-85 Flex-Fuel	12	0	12
Van 4x2	CNG Dedicated	4	0	4
Van 4x2	E-85 Flex-Fuel	87	2	89
Bus	CNG Bi-Fuel	1	0	1
Pickup MD	CNG Bi-Fuel	21	0	21
Van MD	CNG Bi-Fuel	20	0	20
MD 8,501-16,000 GVWR	CNG Bi-Fuel	3	0	3
MD 8,501-16,000 GVWR	CNG Dedicated	2	0	2
Total Number of AFV Acquisitions		337	12	349
Zero Emission Vehicle Credits		0	0	0
Dedicated Light-Duty AFV Credits		8	0	8
Dedicated Medium-Duty AFV Credits		4	0	4
Dedicated Heavy-Duty AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Projected				61
Total AFV Acquisitions with Credits		349	12	422
AFV Percentage of Covered Light-Duty Vehicle Acquisition				180%

Attachment D

National Aeronautics and Space Administration

Petroleum Consumption Report

EO 13149 Covered Petroleum Consumption in GGE

	FY 1999* Baseline	FY2000	FY2001	FY2002	FY2003
Gasoline	1,234,888	1,211,832	1,112,032	1,122,625	1,135,805
Diesel	243,193	212,025	216,041	188,405	81,364
Diesel component from biodiesel		7,396	0	6,315	118,469
TOTAL	1,478,081	1,423,857	1,328,073	1,317,344	1,335,638
Reduction**	N/A	3.7 %	10.1 %	10.9 %	9.6 %

*NASA-wide fleet use of gasoline and diesel fuel was determined for fiscal year (FY) 1999, for both covered and non-covered vehicles. The FY 1999 baseline was originally calculated at 1,949,566 GGE's. After reviewing petroleum usage for FY's 2000, 2001 and 2002, it was apparent that the original estimate for FY 1999 was inaccurate. As such, NASA's Manager of Transportation Programs adjusted the FY 1999 baseline to 1,478,081 GGE's during the FY 2002 reporting cycle. This estimate more accurately reflects an appropriate baseline based upon subsequent years petroleum usage and reductions, as well as anticipated reductions in future years. Although this estimated baseline reduces NASA's percentages in attaining the goals, it more clearly reflects actual reductions across the Agency.

**Reduction is the % reduction compared t the FY 1999 Baseline Total

Alternative Fuel Consumption (in GGE)

	FY2000	FY2001	FY2002	FY2003
CNG	5,674	21,166	26,890	17,314
LNG	0	0	0	0
LPG	0	908	131	2,576
E-85	6,283	59,552	14	860
Electric	0	0	0	0
M-85	8,593	0	0	0
Biodiesel (B100)*	1,849	0	2,492	29,618
TOTAL	22,399	81,626	29,527	50,368
Estimated Total Fuel Used in AFVs	*	*	175,750	220,353
% of Alt Fuel Use in AFVs w/o biodiesel[1]			15.382 %	9.4167 %

*Biodiesel is calculated at 20% of the reported B20 and 100% of the reported B100 fuel used in the Section III Actual Fuel

Average Fuel Economy of non-AFV Light Duty Vehicle Acquisitions (in mpg)

	FY 1999 Baseline	FY2000	FY2001	FY2002	FY2003
Fuel Economy	18	0	26.5	19	21.1
Change Compared to Baseline		*	8.5	1	3.1